

CLAIMS

1. An exposure device comprising:

a substrate (1);

5 an emissive element array provided on said substrate (1) and having a plurality of organic EL emissive elements (2) arranged linearly; and

a drive circuit (4) provided on said substrate (1) and including an element switching said organic EL emissive element (2),

10 wherein said organic EL emissive element (2) has an edge emission structure emitting light in an edge direction that is perpendicular to a direction of deposition of electrode layers (12, 15) and organic compound layers (13, 14), and

an emitting area of one emissive element, (S), as viewed in said direction of deposition, and a period of the emissive elements disposed side by side, (d), satisfy the relationship of $S > d^2$.

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2. The exposure device according to claim 1, wherein said organic compound layers (13, 14) have a thickness that is smaller than a central emission wavelength, and

20 said exposure device has an optical waveguide layer (3) with a thickness greater than said central emission wavelength on a side of said electric layer (12, 15) opposed to said organic compound layers (13, 14).

3. The exposure device according to claim 2, wherein said optical waveguide layer (3) has a first transparent layer (5) of a refractive index of n_1 in contact with said organic EL emissive element (2) and a second transparent layer (6) with a refractive index of n_2 in contact with a portion of said first transparent layer (5) that is out of contact with said organic EL emissive element (2), and

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the refractive index of said first transparent layer (5), n_1 , and the refractive index of said second transparent layer (6), n_2 , satisfy the relationship of $n_1 > n_2$.

4. The exposure device according to claim 3, having a light-absorbing shading wall (16) between said optical waveguide layers (3) that each correspond to one of said organic EL-emissive elements (2).

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5. The exposure device according to claim 3, wherein said organic compound layers (13, 14) on a side of said electrode layer (12, 15) opposed to said first transparent layer (5) has a refractive index, n_3 , that is smaller than the refractive index of said first transparent layer (5), n_1 .

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6. The exposure device according to claim 2, wherein said organic EL emissive element (2) is constructed by providing said first electrode layer (12) overlying said substrate (1), providing said organic compound layers (13, 14) overlying said first electrode layer (12), and providing said second electrode layer (15) overlying said organic compound layers, and

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said second electrode layer (15) is made of a transmissive electrode material, and said optical waveguide layer (3) is provided on said second electrode layer (15).

7. The exposure device according to claim 2, wherein said optical waveguide layer (3) has a second transparent layer (6) with a refractive index of n_2 provided on said substrate (1) and a first transparent layer (5) with a refractive index of n_1 generally surrounded by said second transparent layer, and

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said organic EL emissive element (2) is constructed by providing said first electrode (52) overlying said optical waveguide layer (3), providing said organic compound layers (53, 54) overlying said first electrode layer (52), and providing said second electrode layer (55) overlying said organic compound layers (53, 54).

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8. The exposure device according to claim 7, wherein a groove is provided in

said substrate (1), and

said second transparent layer (6) and said first transparent layer (5) are provided within said groove.

5 9. The exposure device according to claim 8, wherein a light-absorbing shading film is provided between an inner wall surface of said groove and said second transparent layer (6).

10 10. The exposure device according to claim 1, having a shading wall (16) that is non-transmissive to light and light-absorbing between adjacent ones of said organic EL emissive elements (2).

11. The exposure device according to claim 1, wherein said organic compound layers have

15 a three-layer structure of an emitting layer (46) with a refractive index of n_4 and sandwiching layers (43, 44) with a refractive index of n_5 sandwiching said emitting layer (46) and having electron and hole transporting materials mixed together,

the refractive index of said emitting layer (46), n_4 , and the refractive index of said sandwiching layers (43, 44), n_5 , satisfy the relationship of $n_4 > n_5$, and

20 said exposure device has a shading wall (16) that is non-transmissive to light and light-absorbing between adjacent ones of said organic EL emissive elements.

12. The exposure device according to claim 1, wherein said substrate (1) is a single-crystal silicon substrate or a polycrystalline silicon substrate.

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13. An image forming device including an exposure device and a photosensitive material exposed to light by said exposure device, said exposure device comprising:

a substrate (1);

an emissive element array provided on said substrate (1) and having a plurality of organic EL emissive elements (2) arranged linearly; and

5 a drive circuit (4) provided on said substrate (1) and including an element switching said organic EL emissive element (2),

wherein said organic EL emissive element (2) has an edge emission structure emitting light in an edge direction that is perpendicular to a direction of deposition of electrode layers (12, 15) and organic compound layers (13, 14), and

10 an emitting area of one emissive element, (S), as viewed in said direction of deposition, and a period of the emissive elements disposed side by side, (d), satisfy the relationship of $S > d^2$.